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Please find below and/or attached an Office communication concerning this application or proceeding.

JK

<b>Office Action Summary</b>	<b>Application No.</b> 10/775,069	<b>Applicant(s)</b> GUPTA ET AL.	
	<b>Examiner</b> Cynthia L Davis	<b>Art Unit</b> 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-135 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-135 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 54, 56-60, and 134 are rejected under 35 U.S.C. 102(e) as being anticipated by Craft (6687758).

Regarding claim 54, transferring a connection to a network interface card; and taking over from a host computer attached to the network and performing at least one network function at the network interface card is disclosed in Craft, column 3, lines 7-9 (disclosing the INIC performing network layer processing), and 29-30 (disclosing handing out fast-path connections to the INICs).

Regarding claim 56, data from the network is received and processed by the network interface card is disclosed in Craft, column 3, lines 7-9 (disclosing the NIC receiving packets).

Regarding claim 57, said processing comprises taking over and performing at least one function of a physical layer from the host computer is disclosed in column 2, lines 27-29 (the INICs have physical interfaces to the network).

Regarding claim 58, said processing comprises taking over and performing at least one function of a data link layer from the host computer is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC).

Regarding claim 59, said processing comprises taking over and performing at least one function of a network layer from the host computer is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC).

Regarding claim 60, said processing comprises taking over and performing at least one function of a transport layer from the host computer is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC).

Regarding claim 134, the network interface card is a layer 5 network interface card in a network implementing an open systems interconnection (OSI) protocol is disclosed in Craft, column 3, lines 8-9, (the network layer, layer 5 in the OSI standard, is implemented on the NIC, see also Brandt, column 10, line 13-15).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-8, 10-12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Berg.

Regarding claim 1, an upper layer protocol (ULP) handler is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC); a TCP

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handler capable of interfacing with said ULP handler is disclosed in Craft, column 2, lines 53-54 (disclosing TCP connections that are handled by the INIC) and, a link handler is disclosed in Craft, column 3, lines 7-9 (disclosing handling of link layer functions). The network interface card is adapted to take over and perform at least one session layer function of a host computer connected to a network is missing from Craft. This is disclosed in Berg, paragraph 192-193 (disclosing an intelligent NIC, that handles session-related tasks). It would have been obvious to one skilled in the art at the time of the invention to configure the NIC of Craft to handle session layer functions. The motivation would be to have the NIC take on a share of higher-level protocol processing functions (see also Goldenberg, paragraph 3).

Regarding claim 3, data from the network is received and processed by the network interface card is disclosed in Craft, column 3, lines 7-9 (disclosing the NIC receiving packets).

Regarding claim 4, said processing comprises taking over and performing at least one function of a physical layer from the host computer is disclosed in column 2, lines 27-29 (the INICs have physical interfaces to the network).

Regarding claim 5, said processing comprises taking over and performing at least one function of a data link layer from the host computer is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC).

Regarding claim 6, said processing comprises taking over and performing at least one function of a network layer from the host computer is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC).

Regarding claim 7, said processing comprises taking over and performing at least one function of a transport layer from the host computer is disclosed in Craft, column 3, lines 7-9 (disclosing processing various higher layers by the INIC).

Regarding claim 8, said ULP handler is adapted to communicate with a ULP driver of said host computer is disclosed in Craft, column 3, lines 15-16 and figure 1 element 64 (the INIC driver communicates with the protocol stack, which performs upper level functions).

Regarding claim 10, said TCP handler is adapted to communicate with the network is disclosed in Craft, column 2, lines 53-54 (disclosing TCP connections to the network that are handled by the INIC).

Regarding claim 11, said link handler is adapted to communicate with a link driver of said host computer is disclosed in Craft, column 3, lines 15-16 and figure 1 element 64 (the INIC driver would assist with link functions on the INIC).

Regarding claim 12, said link handler is adapted to communicate with a network is disclosed in Craft, column 3, lines 7-9 (disclosing handling of link layer functions regarding packets received from the network).

Regarding claim 14, said network interface card is capable of receiving commands from an enhanced stack belonging to said host, said enhanced stack being further capable of supporting session layer acceleration is disclosed in Craft, figure 1, element 62 (the ATCP protocol stack) and column 3, lines 16-20 (it performs fast-path connection, or session, related processing).

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2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Berg in further view of Heider. The network interface card is a layer 5 network interface card in a network implementing an open systems interconnection (OSI) protocol is missing from Craft. However, Craft does disclose in column 3, lines 8-9, the network layer (layer 5 in the OSI standard) being implemented on the NIC (see also Brandt, column 10, line 13-15). Further, Heider discloses in column 16, lines 60-62, that the OSI protocol is well-known in the art. It would have been obvious to one skilled in the art at the time of the invention to have the NIC implement the OSI protocol. The motivation would be to use a well-known protocol.

3. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Berg in further view of Bailey.

Regarding claim 9, said TCP handler is adapted to communicate with a transport accelerator driver of said host computer is missing from Craft. However, Bailey discloses in paragraph 185 a network accelerator that communicates with a NIC. It would have been obvious to one skilled in the art at the time of the invention to include the accelerator of Bailey in the system of Craft. The motivation would be to speed up the connections.

Regarding claim 13, said network interface card further comprises at least one of a transport accelerator, embedded accelerator, portable stack, embedded link driver and embedded applications is missing from Craft. However, Bailey discloses in paragraph 185 a network accelerator that is coupled to a NIC. It would have been

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obvious to one skilled in the art at the time of the invention to include the accelerator of Bailey in the NIC of Craft. The motivation would be to speed up the connections.

4. Claims 15-32, 35-42, and 45-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Berg in further view of Grun.

Regarding claim 15, the commands between said enhanced stack and said network interface card are performed using acceleration primitives is missing from Craft. However, Grun discloses in column 3, lines 21-25, defining a set of command primitives for communications between an I/O device (such as a stack) and a channel adapter (such as a NIC). It would have been obvious to one skilled in the art to use primitives to communicate between the stack and NIC of Craft. The motivation would be to be able to define whatever command primitives are needed in the system. See also Newton's Telecom Dictionary, defining a primitive as an abstract, implementation independent interaction between a layer service user and provider; a primitive may be defined and used to implement any kind of interaction between the two entities.

Regarding claim 16, said network interface card handles only a subset said acceleration primitives sent to said network interface card from a plurality of said acceleration primitives sent to a plurality of network interface card devices is disclosed in Craft, column 3, lines 29-32 (there are 2 INICs, each would handle its own subset primitives sent by the ATCP stack).

Regarding claim 17, at least one of said acceleration primitives is used to establish a direct connection between ULP of said host and said ULP handler is disclosed in Craft, column 3, lines 15-16 and figure 1 element 64 (the INIC driver



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communicates with the protocol stack, which performs upper level functions; the ULPs are connected, so there must be some interaction there, which involves primitive, see rejection of claim 15).

Regarding claim 18, said direct connection enables at least one function associated with a TCP/IP layer to be processed on said network interface card is disclosed in Craft, column 2, lines 53-54 (disclosing TCP connections that are handled by the INIC).

Regarding claim 19, said direct connection comprises enables transferring data to said network interface card from said host and transferring data from said network interface card to said host is disclosed in Craft, column 3, lines 16-25 (disclosing transferring packets between the ATCP stack and INIC).

Regarding claim 20, said transferring data to said network interface card includes at least one of a transfer in request, a success transfer in reply and a fail transfer in reply is disclosed in Craft, column 3, lines 16-25 (disclosing mechanisms for transferring packets between the ATCP stack and INIC).

Regarding claim 21, said transferring data from said network interface card includes at least one of a transfer out request, a success transfer out reply and a fail transfer out reply is disclosed in Craft, column 3, lines 16-25 (disclosing mechanisms for transferring packets between the ATCP stack and INIC).

Regarding claim 22, said acceleration primitives are enabled by the use of an application programming interface (API) for interfacing between said host and said network interface card, said API being further comprised of a plurality of message

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primitives is missing from Craft. However, Grun discloses in column 3, lines 21-25, defining a set of command primitives (an API) for communications between an I/O device (such as a stack) and a channel adapter (such as a NIC). It would have been obvious to one skilled in the art to use an API of primitives to communicate between the stack and NIC of Craft. The motivation would be to be able to define whatever command primitives are needed in the system. See also Newton's Telecom Dictionary, defining a primitive as an abstract, implementation independent interaction between a layer service user and provider.

Regarding claim 23, at least one of said message primitives is a connection transfer in message primitive sent in order to transfer a connection for acceleration by the network interface card is disclosed in Craft, column 3, lines 15-19 (disclosing transferring connections to the INIC for fast-path processing).

Regarding claim 24, said connection transfer in message primitive further contains at least information required to start a new or continued processing of an existing connection is disclosed in Craft, column 3, lines 15-19 (disclosing transferring connections to the INIC for fast-path processing, such required information must be included in the transaction).

Regarding claim 25, said necessary information comprises at least one of a connection 4tuple, initial sequence number, unacknowledged sequence number, acknowledgement sequence number, current sent time stamp, current received timestamp and remote or local negotiated window scale values is disclosed in Craft,

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column 4, lines 1-2 (disclosing the connection information including timers and receive and transmit windows for sliding window protocols).

Regarding claim 26, said connection transfer in message primitive includes a unique identifier for connection reference, said unique identifier being further recognizable by said network interface card and by said host is disclosed in Craft, column 3, line 59-column 4, line 9 (disclosing creating the CCB for each connection and storing it in both the ATCP stack and the INIC).

Regarding claim 27, at least one of said message primitives is a connection transfer out message primitive capable of causing said network interface card to transfer a connection out of said network interface card is disclosed in Craft, column 3, lines 43-46 (disclosing transferring connections from the INIC to the host for slow-path processing).

Regarding claim 28, said connection transfer out message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when transferring the connection. The motivation would be to fully describe the connection in order to transfer it.

Regarding claim 29, at least one of said message primitives is a connection disconnect message primitive, said message primitive being capable of causing said network interface card to gradually close a previously opened connection to said

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network interface card is disclosed in column 7, lines 34-39 (disclosing the INIC sending a disconnection indication).

Regarding claim 30, said connection disconnect message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when disconnecting the connection. The motivation would be to fully describe the connection in order to disconnect it.

Regarding claim 31, at least one of said message primitives is a connection abort message primitive, said message primitive being capable of causing said network interface card to abort a previously opened connection to said network interface card is disclosed in column 8, lines 47-49 or Craft (disclosing aborting connections).

Regarding claim 32, said connection abort message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when aborting the connection. The motivation would be to fully describe the connection in order to abort it.

Regarding claim 35, at least one of said message primitives is a connection send message primitive, said message primitive being capable of causing a transmission of data over an established connection is disclosed in Craft, column 6, lines 58-61 (disclosing sending out data on a connection via a port on the INIC).

Regarding claim 36, said connection send message primitive is associated with data related to a TCP/IP connection, said data is at least one of connection reference, list of buffers in the host memory and their length, said buffers containing data to be transferred over a connection is disclosed in Craft, column 6, lines 61-67 (disclosing a connection handle for the send request).

Regarding claim 37, at least one of said message primitives is a connection receive message primitive, said message primitive being capable of causing a reception of data over an established connection, the data being received by connection specific receive buffers in a host memory is disclosed in column 4, lines 10-21 (disclosing a file write that is associated with a CCB, which would include data to be written, being received).

Regarding claim 38, said connection receive message primitive is associated with data related to a TCP/IP connection, said data is at least one of connection reference, list of connection specific buffers in the host memory and their length is disclosed in column 4, lines 10-12 (the CCB is the connection reference).

Regarding claim 39, at least one of said message primitives is a connection synchronization message primitive, said message primitive being capable of flushing existing message pipes between the host and said network interface card is disclosed in Craft, column 5, lines 5-9 (disclosing synching the connections) and column 8, lines 46-47 (disclosing flushing connections).

Regarding claim 40, said connection synchronization message primitive further includes a connection reference is not specifically disclosed in Craft. However, Craft

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discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when synching the connection. The motivation would be to fully describe the connection in order to synchronize it.

Regarding claim 41, a connection synchronization reply message primitive is sent in response to said connection synchronization message primitive is missing from Craft. However, Grun discloses in column 16, lines 50-55, generating confirmation primitives in reply to other primitives. I would have been obvious to one skilled in the art at the time of the invention to use the reply messages of Grun in the system of Craft. The motivation would be to signal that the synchronization process started by the synchronization primitives is completed.

Regarding claim 42, said connection synchronization reply message primitive further includes a connection reference is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when replying to the synch message for the connection. The motivation would be to fully describe the synchronized connection so that the system knows what connection the reply is in reference to.

Regarding claim 45, at least one of said message primitives is a connection receive notify message primitive, said message primitive being capable of notifying of the reception of additional data by said network interface card over a connection is disclosed in Craft, column 3, lines 43-46.

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Regarding claim 46, said additional data may be directed to one of an anonymous host buffer and a connection specific host buffer is disclosed in Craft, column 3, lines 43-46 (the data may go to a destination in storage on the host, which is an anonymous source buffer).

Regarding claim 47, at least one of said message primitives is a asynchronous buffer message primitive, said message primitive being capable of posting said anonymous receive buffers to said network interface card is disclosed in Craft, column 4, lines 22-23 (disclosing sending buffer addresses to the INIC).

Regarding claim 48, said anonymous receive buffers are used for a received TCP data and a layer 2 data is disclosed in Craft, column 2, lines 53-55.

Regarding claim 49, data associated with said asynchronous buffer message primitive includes a list of buffers in host memory and buffer lengths is disclosed in Craft, column 4, lines 22-23 (disclosing sending addresses of buffers with available space, which would indicate length, to the INIC).

Regarding claim 50, data associated with said connection receive notify message primitive includes connection reference, buffer identification and amount of data posted into the buffer is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when notifying a receipt of data. The motivation would be to fully describe the connection to which the received data pertains.

Regarding claim 51, said network interface card is capable of providing a notification from said network interface card to the host with an indication of a change in connection state is disclosed in column 7, lines 34-36 (link failure is a change of state).

Regarding claim 52, the data associated with said notification includes connection reference, notification type and a connection state is disclosed in column 7, lines 33-45 (disclosing notifying the host that a specific connection is in link failure, and a disconnect status indication).

Regarding claim 53, said notification type includes connection established, connection disconnected, connection timed-out and connection gracefully closed is disclosed in column 7, line 37 (disconnect) and column 8, lines 45-49 (timeout)

5. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Berg and Grun in further view of Craft II (6697868).

Regarding claim 33, at least one of said message primitives is a connection shutdown of transmission message primitive, said message primitive being capable of causing said network interface card to gracefully close a write side of a connection of said NIC is missing from Craft. However, Craft does disclose write connections in column 4, line 10, file write connections. Further, Craft II (6697868) discloses in column 8, lines 48-51, a close connection command. It would have been obvious to one skilled in the art at the time of the invention to include a close connection command in the system of Craft. The motivation would be to close a connection when it is no longer needed.



Regarding claim 34, said connection shutdown of transmission message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when shutting down the connection. The motivation would be to fully describe the connection in order to shut it down.

6. Claims 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Berg and Grun in further view of Anand.

Regarding claim 43, said network interface card is capable of sending a connection send notify message primitive, wherein said connection send notify message primitive notifies of a successful transfer of an amount of data related to an offloaded TCP connection is missing from Craft. However, Anand discloses in column 8, lines 33-34, notification upon completion of a data transfer. It would have been obvious to one skilled in the art at the time of the invention to include a send notify primitive in the system of Craft. The motivation would be to indicate that a transfer was completed.

Regarding claim 44, data associated with said connection send notify message primitive includes at least one of a connection reference and amount of data successfully transferred over the connection is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the

invention to include the connection reference when notifying that a transfer has completed. The motivation would be to fully describe the completed transfer.

7. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Heider. The network interface card is a layer 5 network interface card in a network implementing an open systems interconnection (OSI) protocol is missing from Craft. However, Craft does disclose in column 3, lines 8-9, the network layer (layer 5 in the OSI standard) being implemented on the NIC (see also Brandt, column 10, line 13-15). Further, Heider discloses in column 16, lines 60-62, that the OSI protocol is well-known in the art. It would have been obvious to one skilled in the art at the time of the invention to have the NIC implement the OSI protocol. The motivation would be to use a well-known protocol.

8. Claims 61 and 135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Kitai.

Regarding claim 61, sending a sequence of initialization commands from a ULP driver of a host to transport accelerator provider (TAP) of said host is disclosed in Craft, column 3, lines 56-58 (disclosing an connection initialization sequence involving the host, which contains upper layer functions, see column 3, lines 11-14, and the ATCP stack, which acts as the TAP). Sending a transfer message from said TAP to a TCP handler of a network interface card (NIC) is disclosed in column 3, lines 15-18 (disclosing offloading connections to the INIC). Sending from said NIC a synchronization command to a server over a network connecting said host computer and said server; receiving by said NIC a synchronization acknowledgement message

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over said network from said server; sending from said NIC an acknowledgment message to said server is missing from Craft. However, Kitai discloses in column 3, lines 47-56 servers exchanging SYN/ACK messages when establishing a data communication path. It would have been obvious to one skilled in the art at the time of the invention to use the SYN/ACK structure of Kitai in the system of Craft. The motivation would be to ensure that subsequent data communication can be performed (Kitai, column 3, lines 55-56). Sending a notification command to a ULP handler of said NIC is disclosed in Craft, column 3, lines 43-46 (a receive notify command when data is to be sent to be processed). Sending from said NIC a connection notification command to said TAP of said host is disclosed in column 7, lines 33-39 (disclosing the INIC notifying all upper protocol drivers, of which the ATCP stack is one, of a link failure condition in a connection). Sending a connected information command to said ULP driver of said host is disclosed in Craft, column 3, lines 43-46 (a connect notify command is sent when data associated with a particular connection received by the INIC is sent to be processed).

Regarding claim 135, the network interface card is a layer 5 network interface card in a network implementing an open systems interconnection (OSI) protocol is disclosed in Craft, column 3, lines 8-9, (the network layer, layer 5 in the OSI standard, is implemented on the NIC, see also Brandt, column 10, line 13-15.

9. Claims 62-72, 75-82, and 85-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Kitai in further view of Grun.

Regarding claim 62, said acceleration primitives are enabled by the use of an application programming interface (API) for interfacing between said host and said network interface card, said API being further comprised of a plurality of message primitives is missing from Craft. However, Grun discloses in column 3, lines 21-25, defining a set of command primitives (an API) for communications between an I/O device (such as a stack) and a channel adapter (such as a NIC). It would have been obvious to one skilled in the art to use an API of primitives to communicate between the stack and NIC of Craft. The motivation would be to be able to define whatever command primitives are needed in the system. See also Newton's Telecom Dictionary, defining a primitive as an abstract, implementation independent interaction between a layer service user and provider.

Regarding claim 63, at least one of said message primitives is a connection transfer in message primitive sent in order to transfer a connection for acceleration by the network interface card is disclosed in Craft, column 3, lines 15-19 (disclosing transferring connections to the INIC for fast-path processing).

Regarding claim 64, said connection transfer in message primitive further contains at least information required to start a new or continued processing of an existing connection is disclosed in Craft, column 3, lines 15-19 (disclosing transferring connections to the INIC for fast-path processing, such required information must be included in the transaction).

Regarding claim 65, said necessary information comprises at least one of a connection 4tuple, initial sequence number, unacknowledged sequence number,

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acknowledgement sequence number, current sent time stamp, current received timestamp and remote or local negotiated window scale values is disclosed in Craft, column 4, lines 1-2 (disclosing the connection information including timers and receive and transmit windows for sliding window protocols).

Regarding claim 66, said connection transfer in message primitive includes a unique identifier for connection reference, said unique identifier being further recognizable by said network interface card and by said host is disclosed in Craft, column 3, line 59-column 4, line 9 (disclosing creating the CCB for each connection and storing it in both the ATCP stack and the INIC).

Regarding claim 67, at least one of said message primitives is a connection transfer out message primitive capable of causing said network interface card to transfer a connection out of said network interface card is disclosed in Craft, column 3, lines 43-46 (disclosing transferring connections from the INIC to the host for slow-path processing).

Regarding claim 68, said connection transfer out message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when transferring the connection. The motivation would be to fully describe the connection in order to transfer it.

Regarding claim 69, at least one of said message primitives is a connection disconnect message primitive, said message primitive being capable of causing said

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network interface card to gradually close a previously opened connection to said network interface card is disclosed in column 7, lines 34-39 (disclosing the INIC sending a disconnection indication).

Regarding claim 70, said connection disconnect message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when disconnecting the connection. The motivation would be to fully describe the connection in order to disconnect it.

Regarding claim 71, at least one of said message primitives is a connection abort message primitive, said message primitive being capable of causing said network interface card to abort a previously opened connection to said network interface card is disclosed in column 8, lines 47-49 or Craft (disclosing aborting connections).

Regarding claim 72, said connection abort message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when aborting the connection. The motivation would be to fully describe the connection in order to abort it.

Regarding claim 75, at least one of said message primitives is a connection send message primitive, said message primitive being capable of causing a transmission of

data over an established connection is disclosed in Craft, column 6, lines 58-61 (disclosing sending out data on a connection via a port on the INIC).

Regarding claim 76, said connection send message primitive is associated with data related to a TCP/IP connection, said data is at least one of connection reference, list of buffers in the host memory and their length, said buffers containing data to be transferred over a connection is disclosed in Craft, column 6, lines 61-67 (disclosing a connection handle for the send request).

Regarding claim 77, at least one of said message primitives is a connection receive message primitive, said message primitive being capable of causing a reception of data over an established connection, the data being received by connection specific receive buffers in a host memory is disclosed in column 4, lines 10-21 (disclosing a file write that is associated with a CCB, which would include data to be written, being received).

Regarding claim 78, said connection receive message primitive is associated with data related to a TCP/IP connection, said data is at least one of connection reference, list of connection specific buffers in the host memory and their length is disclosed in column 4, lines 10-12 (the CCB is the connection reference).

Regarding claim 79, at least one of said message primitives is a connection synchronization message primitive, said message primitive being capable of flushing existing message pipes between the host and said network interface card is disclosed in Craft, column 5, lines 5-9 (disclosing synching the connections) and column 8, lines 46-47 (disclosing flushing connections).

Regarding claim 80, said connection synchronization message primitive further includes a connection reference is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when synching the connection. The motivation would be to fully describe the connection in order to synchronize it.

Regarding claim 81, a connection synchronization reply message primitive is sent in response to said connection synchronization message primitive is missing from Craft. However, Grun discloses in column 16, lines 50-55, generating confirmation primitives in reply to other primitives. I would have been obvious to one skilled in the art at the time of the invention to use the reply messages of Grun in the system of Craft. The motivation would be to signal that the synchronization process started by the synchronization primitives is completed.

Regarding claim 82, said connection synchronization reply message primitive further includes a connection reference is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when replying to the synch message for the connection. The motivation would be to fully describe the synchronized connection so that the system knows what connection the reply is in reference to.

Regarding claim 85, at least one of said message primitives is a connection receive notify message primitive, said message primitive being capable of notifying of



the reception of additional data by said network interface card over a connection is disclosed in Craft, column 3, lines 43-46.

Regarding claim 86, said additional data may be directed to one of an anonymous host buffer and a connection specific host buffer is disclosed in Craft, column 3, lines 43-46 (the data may go to a destination in storage on the host, which is an anonymous source buffer).

Regarding claim 87, at least one of said message primitives is a asynchronous buffer message primitive, said message primitive being capable of posting said anonymous receive buffers to said network interface card is disclosed in Craft, column 4, lines 22-23 (disclosing sending buffer addresses to the INIC).

Regarding claim 88, said anonymous receive buffers are used for a received TCP data and a layer 2 data is disclosed in Craft, column 2, lines 53-55.

Regarding claim 89, data associated with said asynchronous buffer message primitive includes a list of buffers in host memory and buffer lengths is disclosed in Craft, column 4, lines 22-23 (disclosing sending addresses of buffers with available space, which would indicate length, to the INIC).

Regarding claim 90, data associated with said connection receive notify message primitive includes connection reference, buffer identification and amount of data posted into the buffer is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference

when notifying a receipt of data. The motivation would be to fully describe the connection to which the received data pertains.

Regarding claim 91, said network interface card is capable of providing a notification from said network interface card to the host with an indication of a change in connection state is disclosed in column 7, lines 34-36 (link failure is a change of state).

Regarding claim 92, the data associated with said notification includes connection reference, notification type and a connection state is disclosed in column 7, lines 33-45 (disclosing notifying the host that a specific connection is in link failure, and a disconnect status indication).

Regarding claim 93, said notification type includes connection established, connection disconnected, connection timed-out and connection gracefully closed is disclosed in column 7, line 37 (disconnect) and column 8, lines 45-49 (timeout)

10. Claims 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Kitai and Grun in further view of Craft II (6697868).

Regarding claim 73, at least one of said message primitives is a connection shutdown of transmission message primitive, said message primitive being capable of causing said network interface card to gracefully close a write side of a connection of said NIC is missing from Craft. However, Craft does disclose write connections in column 4, line 10, file write connections. Further, Craft II (6697868) discloses in column 8, lines 48-51, a close connection command. It would have been obvious to one skilled in the art at the time of the invention to include a close connection command in the

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system of Craft. The motivation would be to close a connection when it is no longer needed.

Regarding claim 74, said connection shutdown of transmission message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when shutting down the connection. The motivation would be to fully describe the connection in order to shut it down.

11. Claims 83-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Kitai and Grun in further view of Anand.

Regarding claim 83, said network interface card is capable of sending a connection send notify message primitive, wherein said connection send notify message primitive notifies of a successful transfer of an amount of data related to an offloaded TCP connection is missing from Craft. However, Anand discloses in column 8, lines 33-34, notification upon completion of a data transfer. It would have been obvious to one skilled in the art at the time of the invention to include a send notify primitive in the system of Craft. The motivation would be to indicate that a transfer was completed.

Regarding claim 84, data associated with said connection send notify message primitive includes at least one of a connection reference and amount of data successfully transferred over the connection is not specifically disclosed in Craft.

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However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when notifying that a transfer has completed. The motivation would be to fully describe the completed transfer.

12. Claims 94-104, 107-114, and 117-125 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Grun.

Regarding claim 94, Interfacing between a host and a network interface card is disclosed in Craft, column 3, lines 2-3 (disclosing INICs connected to a host). An application programming interface (API), said API facilitating, said API comprising of a plurality of message primitives is missing from Craft. However, Grun discloses in column 3, lines 21-25, defining a set of command primitives (an API) for communications between an I/O device (such as a stack) and a channel adapter (such as a NIC). It would have been obvious to one skilled in the art to use an API of primitives to communicate between the stack and NIC of Craft. The motivation would be to be able to define whatever command primitives are needed in the system. See also Newton's Telecom Dictionary, defining a primitive as an abstract, implementation independent interaction between a layer service user and provider.

Regarding claim 95, at least one of said message primitives is a connection transfer in message primitive sent in order to transfer a connection for acceleration by the network interface card is disclosed in Craft, column 3, lines 15-19 (disclosing transferring connections to the INIC for fast-path processing).

Regarding claim 96, said connection transfer in message primitive further contains at least information required to start a new or continued processing of an existing connection is disclosed in Craft, column 3, lines 15-19 (disclosing transferring connections to the INIC for fast-path processing, such required information must be included in the transaction).

Regarding claim 97, said necessary information comprises at least one of a connection 4tuple, initial sequence number, unacknowledged sequence number, acknowledgement sequence number, current sent time stamp, current received timestamp and remote or local negotiated window scale values is disclosed in Craft, column 4, lines 1-2 (disclosing the connection information including timers and receive and transmit windows for sliding window protocols).

Regarding claim 98, said connection transfer in message primitive includes a unique identifier for connection reference, said unique identifier being further recognizable by said network interface card and by said host is disclosed in Craft, column 3, line 59-column 4, line 9 (disclosing creating the CCB for each connection and storing it in both the ATCP stack and the INIC).

Regarding claim 99, at least one of said message primitives is a connection transfer out message primitive capable of causing said network interface card to transfer a connection out of said network interface card is disclosed in Craft, column 3, lines 43-46 (disclosing transferring connections from the INIC to the host for slow-path processing).

Regarding claim 100, said connection transfer out message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when transferring the connection. The motivation would be to fully describe the connection in order to transfer it.

Regarding claim 101, at least one of said message primitives is a connection disconnect message primitive, said message primitive being capable of causing said network interface card to gradually close a previously opened connection to said network interface card is disclosed in column 7, lines 34-39 (disclosing the INIC sending a disconnection indication).

Regarding claim 102, said connection disconnect message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when disconnecting the connection. The motivation would be to fully describe the connection in order to disconnect it.

Regarding claim 103, at least one of said message primitives is a connection abort message primitive, said message primitive being capable of causing said network interface card to abort a previously opened connection to said network interface card is disclosed in column 8, lines 47-49 or Craft (disclosing aborting connections).

Regarding claim 104, said connection abort message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when aborting the connection. The motivation would be to fully describe the connection in order to abort it.

Regarding claim 107, at least one of said message primitives is a connection send message primitive, said message primitive being capable of causing a transmission of data over an established connection is disclosed in Craft, column 6, lines 58-61 (disclosing sending out data on a connection via a port on the INIC).

Regarding claim 108, said connection send message primitive is associated with data related to a TCP/IP connection, said data is at least one of connection reference, list of buffers in the host memory and their length, said buffers containing data to be transferred over a connection is disclosed in Craft, column 6, lines 61-67 (disclosing a connection handle for the send request).

Regarding claim 109, at least one of said message primitives is a connection receive message primitive, said message primitive being capable of causing a reception of data over an established connection, the data being received by connection specific receive buffers in a host memory is disclosed in column 4, lines 10-21 (disclosing a file write that is associated with a CCB, which would include data to be written, being received).

Regarding claim 110, said connection receive message primitive is associated with data related to a TCP/IP connection, said data is at least one of connection reference, list of connection specific buffers in the host memory and their length is disclosed in column 4, lines 10-12 (the CCB is the connection reference).

Regarding claim 111, at least one of said message primitives is a connection synchronization message primitive, said message primitive being capable of flushing existing message pipes between the host and said network interface card is disclosed in Craft, column 5, lines 5-9 (disclosing synching the connections) and column 8, lines 46-47 (disclosing flushing connections).

Regarding claim 112, said connection synchronization message primitive further includes a connection reference is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when synching the connection. The motivation would be to fully describe the connection in order to synchronize it.

Regarding claim 113, a connection synchronization reply message primitive is sent in response to said connection synchronization message primitive is missing from Craft. However, Grun discloses in column 16, lines 50-55, generating confirmation primitives in reply to other primitives. I would have been obvious to one skilled in the art at the time of the invention to use the reply messages of Grun in the system of Craft. The motivation would be to signal that the synchronization process started by the synchronization primitives is completed.



Regarding claim 114, said connection synchronization reply message primitive further includes a connection reference is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when replying to the synch message for the connection. The motivation would be to fully describe the synchronized connection so that the system knows what connection the reply is in reference to.

Regarding claim 117, at least one of said message primitives is a connection receive notify message primitive, said message primitive being capable of notifying of the reception of additional data by said network interface card over a connection is disclosed in Craft, column 3, lines 43-46.

Regarding claim 118, said additional data may be directed to one of an anonymous host buffer and a connection specific host buffer is disclosed in Craft, column 3, lines 43-46 (the data may go to a destination in storage on the host, which is an anonymous source buffer).

Regarding claim 119, at least one of said message primitives is a asynchronous buffer message primitive, said message primitive being capable of posting said anonymous receive buffers to said network interface card is disclosed in Craft, column 4, lines 22-23 (disclosing sending buffer addresses to the INIC).

Regarding claim 120, said anonymous receive buffers are used for a received TCP data and a layer 2 data is disclosed in Craft, column 2, lines 53-55.

Regarding claim 121, data associated with said asynchronous buffer message primitive includes a list of buffers in host memory and buffer lengths is disclosed in Craft, column 4, lines 22-23 (disclosing sending addresses of buffers with available space, which would indicate length, to the INIC).

Regarding claim 122, data associated with said connection receive notify message primitive includes connection reference, buffer identification and amount of data posted into the buffer is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when notifying a receipt of data. The motivation would be to fully describe the connection to which the received data pertains.

Regarding claim 123, said network interface card is capable of providing a notification from said network interface card to the host with an indication of a change in connection state is disclosed in column 7, lines 34-36 (link failure is a change of state).

Regarding claim 124, the data associated with said notification includes connection reference, notification type and a connection state is disclosed in column 7, lines 33-45 (disclosing notifying the host that a specific connection is in link failure, and a disconnect status indication).

Regarding claim 125, said notification type includes connection established, connection disconnected, connection timed-out and connection gracefully closed is disclosed in column 7, line 37 (disconnect) and column 8, lines 45-49 (timeout)

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13. Claims 105-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Grun in further view of Craft II (6697868).

Regarding claim 105, at least one of said message primitives is a connection shutdown of transmission message primitive, said message primitive being capable of causing said network interface card to gracefully close a write side of a connection of said NIC is missing from Craft. However, Craft does disclose write connections in column 4, line 10, file write connections. Further, Craft II (6697868) discloses in column 8, lines 48-51, a close connection command. It would have been obvious to one skilled in the art at the time of the invention to include a close connection command in the system of Craft. The motivation would be to close a connection when it is no longer needed.

Regarding claim 106, said connection shutdown of transmission message primitive provides only a connection reference to said network interface card is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to provide only the connection reference when shutting down the connection. The motivation would be to fully describe the connection in order to shut it down.

14. Claims 115-116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Grun in further view of Anand.

Regarding claim 115, said network interface card is capable of sending a connection send notify message primitive, wherein said connection send notify

message primitive notifies of a successful transfer of an amount of data related to an offloaded TCP connection is missing from Craft. However, Anand discloses in column 8, lines 33-34, notification upon completion of a data transfer. It would have been obvious to one skilled in the art at the time of the invention to include a send notify primitive in the system of Craft. The motivation would be to indicate that a transfer was completed.

Regarding claim 116, data associated with said connection send notify message primitive includes at least one of a connection reference and amount of data successfully transferred over the connection is not specifically disclosed in Craft. However, Craft discloses in column 3, line 60, a CCB, which acts as a connection reference. It would have been obvious to one skilled in the art at the time of the invention to include the connection reference when notifying that a transfer has completed. The motivation would be to fully describe the completed transfer.

15. Claims 126-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft (6687758) in view of Grun in further view of Wang.

Regarding claim 126, a set parameters message primitive is capable of updating at least a global TCP/IP parameter of an TCP/IP stack of said NIC is missing from Craft. However, Wang discloses in paragraph 63 modifying TCP parameters. It would have been obvious to one skilled in the art at the time of the invention to use the TCP/IP modification procedure of Wang in the system of Craft. The motivation would be to have the TCP/IP parameters reflect changing conditions in the network.

Regarding claim 127, associated data with said set parameters message primitive includes at least a list of parameters to be changed is missing from Craft. However, Wang discloses in paragraph 63 modifying TCP parameters using messages including the parameters. It would have been obvious to one skilled in the art at the time of the invention to use the TCP/IP modification procedure of Wang in the system of Craft. The motivation would be to have the TCP/IP parameters reflect changing conditions in the network.

Regarding claim 128, a get parameters message primitive is sent to said L5NIC for the purpose of retrieving at least a global non-connection specific TCP/IP parameter from a TCP/IP stack of said NIC is missing from Craft. However, Wang discloses in paragraph 63 exchanging messages containing non-connection specific parameters, such as timeout values. It would have been obvious to one skilled in the art at the time of the invention to use the TCP/IP information retrieval procedure of Wang in the system of Craft. The motivation would be to have various parts of the system know the TCP parameters, which describe the state of the network.

Regarding claim 129, associated data with said get parameters message primitive includes at least a list of parameters to be retrieved is missing from Craft. However, Wang discloses in paragraph 63 exchanging messages containing the TCP parameters. It would have been obvious to one skilled in the art at the time of the invention to identify the parameters retrieved in Wang in the system of Craft. The motivation would be to know which parameters to retrieve.

Regarding claim 130, in response to said get parameters message primitive a get parameters reply message primitive is sent by said NIC is missing from Craft. However, Wang discloses in paragraph 63 exchanging messages containing the TCP parameters. It would have been obvious to one skilled in the art at the time of the invention to reply to a request for parameters as is done in Wang in the system of Craft. The motivation would be to send the requested parameters.

Regarding claim 131, associated data with said get parameters message primitive includes at least a list of reported values is missing from Craft. However, Wang discloses in paragraph 63 exchanging messages containing the TCP parameters. It would have been obvious to one skilled in the art at the time of the invention to list the parameters retrieved in Wang in the system of Craft. The motivation would be to know which parameters have been sent.

Regarding claim 132, a get statistics message primitive is sent to said L5NIC for the purpose of gathering statistics from a TCP/IP stack of said NIC on at least a link layer and TCP/IP is missing from Craft. However, Wang discloses in paragraph 62 communicating and storing TCP connection statistics. It would have been obvious to one skilled in the art at the time of the invention to communicate TCP connection statistics among the NICs and overall TCP control as is done in Wang in the system of Craft. The motivation would be to keep up with changing conditions in the network.

Regarding claim 133, a get statistics reply message primitive is sent in response to said get statistics message primitive, and further providing a set of reported statistical values is missing from Craft. However, Wang discloses in paragraph 62 communicating

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and storing TCP connection statistics. It would have been obvious to one skilled in the art at the time of the invention to send TCP connection statistics among the NICs and overall TCP control in response to a request for such statistics as is done in Wang in the system of Craft. The motivation would be to keep up with changing conditions in the network.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia L. Davis whose telephone number is (571) 272-3117. The examiner can normally be reached on 8:30 to 6, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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